

WHAT IS CLAIMED IS:

1. An elastic member for attaching a sensor device having a sensor protrusion portion into a through hole of a sensor attachment member in such a manner that the elastic member is temporarily assembled onto the sensor protrusion portion and inserted together with the sensor protrusion portion into the through hole so that the sensor device is attached to the sensor attachment member through the elastic member, the elastic member comprising:

a hollow portion having an inner circumferential surface for being temporarily assembled onto the sensor protrusion portion; and

a rear end portion having a rear end flange and a bead portion, wherein the rear end flange protrudes from an outer circumferential surface of the rear end portion for locking on a peripheral portion of one end of the through hole, and

wherein the bead portion is elastically deformable and protrudes from either or both of one surface of the rear end flange facing the sensor device and the other surface of the rear end flange facing the sensor attachment member.

2. The elastic member according to claim 1, further comprising:

a fore end portion including a fore end protrusion and a fore end flange; and

an intermediate portion having an intermediate protrusion for covering at least part of the sensor protrusion portion,

wherein the fore end protrusion protrudes from the inner

circumferential surface of the hollow portion for engaging with a concavity disposed on a fore end side of the sensor protrusion portion,

wherein the fore end flange protrudes from an outer circumferential surface of the fore end portion for locking on a peripheral portion of the other end of the through hole, and

wherein the intermediate protrusion protrudes from at least the inner circumferential surface of the hollow portion.

3. The elastic member according to claim 1, wherein the bead portion is integrally molded with the rear end flange.

4. The elastic member according to claim 1, wherein the bead portion is an annular projection.

5. The elastic member according to claim 1, wherein the bead portion is composed of a plurality of projections having the same shape.

6. The elastic member according to claim 1, wherein the bead portion is disposed on a periphery of the rear end flange.

7. The elastic member according to claim 2, wherein the elastic member is rotation-symmetrical around a center axis of the elastic member, the center axis being along with a direction of insertion of the sensor protrusion portion.

8. The elastic member according to claim 2, wherein a height of the bead portion from the surface of the rear end flange is equal to a total length obtained by adding a predetermined margin and an upper limit value of tolerance of a length of part of the elastic member that contacts an inner circumferential surface of the through hole.

9. The elastic member according to claim 2, wherein the intermediate portion further includes a thick portion disposed between the intermediate protrusion and the rear end flange, thickness of the thick portion is thicker than thickness of the intermediate portion.

10. The elastic member according to claim 9, wherein the thickness of the thick portion is equal to or thinner than thickness of the intermediate protrusion.

11. The elastic member according to claim 10, wherein the bead portion is an annular projection and disposed on a periphery of the rear end flange.

12. The elastic member according to claim 11, wherein the intermediate protrusion protrudes from both of the inner circumferential surface of the hollow portion and the outer circumferential surface of the intermediate portion so that the intermediate protrusion is an annular projection.

13. A sensor comprising:

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a sensor device having a sensor protrusion portion;  
a sensor attachment member having a through hole; and  
an elastic member for attaching the sensor device into the  
through hole in such a manner that the elastic member is temporarily  
assembled onto the sensor protrusion portion and inserted together  
with the sensor protrusion portion into the through hole so that  
the sensor device is attached to the sensor attachment member through  
the elastic member.

14. The sensor according to claim 13,

wherein the elastic member includes:

a hollow portion having an inner circumferential surface  
for being temporarily assembled onto the sensor protrusion portion;  
and

a rear end portion having a rear end flange and a bead  
portion,

wherein the rear end flange protrudes from an outer  
circumferential surface of the rear end portion for locking on a  
peripheral portion of one end of the through hole, and

wherein the bead portion is elastically deformable and  
protrudes from either or both of one surface of the rear end flange  
facing the sensor device and the other surface of the rear end flange  
facing the sensor attachment member.

15. The sensor according to claim 14,

wherein the elastic member further includes:

a fore end portion including a fore end protrusion and a fore end flange; and

an intermediate portion having an intermediate protrusion for covering at least part of the sensor protrusion portion,

wherein the fore end protrusion protrudes from the inner circumferential surface of the hollow portion for engaging with a concavity disposed on a fore end side of the sensor protrusion portion,

wherein the fore end flange protrudes from an outer circumferential surface of the fore end portion for locking on a peripheral portion of the other end of the through hole, and

wherein the intermediate protrusion protrudes from at least the inner circumferential surface of the hollow portion.

16. The sensor according to claim 15, wherein the intermediate portion of the elastic member further includes a thick portion disposed between the intermediate protrusion and the rear end flange, thickness of the thick portion is thicker than thickness of the intermediate portion.

17. The sensor according to claim 16, wherein the thickness of the thick portion is equal to or thinner than thickness of the intermediate protrusion.